Golden, Derrick

From: Golden, Derrick
Sent: Thursday, February 28, 2013 12:17 PM
To: 'Sheehan, Anne'
Cc: 'Weir, Barbara'
Subject: FW: Evaluation of Northeast Area Remedial Action, WR Grce Superfund Site, Acton, MA
Attachments: Figure 1 Revised.pdf

Thanks Anne.

Derrick

From: Sheehan, Anne [mailto:Anne.Sheehan@tetratech.com]
Sent: Thursday, February 28, 2013 9:49 AM
To: Golden, Derrick; McWeeney, Jennifer (DEP) (jennifer.mcweeney@state.ma.us)
Cc: Chris Allen (Chris@actonwater.com); Lydia Duff (Lydia.Duff@grace.com); David Fuerst (dfuerst@oandm-inc.com); Jack Guswa (JGuswa@jgenvironmental.com); dhalley@town.acton.ma.us; Thor Helgason (thelgas@demaximis.com); Seth' 'Jaffe (SDJ@foleyhoag.com); Robert J. Medler (Robert.J.Medler@grace.com)
Subject: RE: Evaluation of Northeast Area Remedial Action, WR Grce Superfund Site, Acton, MA

Attached is a revised figure 1. There was a minor error in the explanation. The explanation had the 100-260 µg/L VDC concentration range shown as one color, while it was mapped as two colors 100-200 µg/L and 200-260 µg/L.

Let me know if you have any questions.

Anne

Anne B. Sheehan | Senior Hydrogeologist
Tel: 978.952.0120 ext. 108 | Fax: 978.952.0122 | Cell: 617.320.9874
Anne.Sheehan@tetratech.com

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One Monarch Drive | Suite 202 | Littleton, MA 01460 | www.tetratech.com

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From: Sheehan, Anne
Sent: Monday, February 25, 2013 12:12 PM
To: Golden.Derrick@epamail.epa.gov; McWeeney, Jennifer (DEP) (jennifer.mcweeney@state.ma.us)
Cc: Chris Allen (Chris@actonwater.com); Lydia Duff (Lydia.Duff@grace.com); David Fuerst (dfuerst@oandm-inc.com); Jack Guswa (JGuswa@jgenvironmental.com); dhalley@town.acton.ma.us; Thor Helgason (thelgas@demaximis.com); Seth' 'Jaffe (SDJ@foleyhoag.com); Robert J. Medler (Robert.J.Medler@grace.com)
Subject: Evaluation of Northeast Area Remedial Action, WR Grce Superfund Site, Acton, MA

Attached is the Evaluation of the Northeast Area Remedial Action required by the ROD. Please let me know if you have any questions.

Anne

Anne B. Sheehan | Senior Hydrogeologist
Tel: 978.952.0120 ext. 108 | Fax: 978.952.0122 | Cell: 617.320.9874
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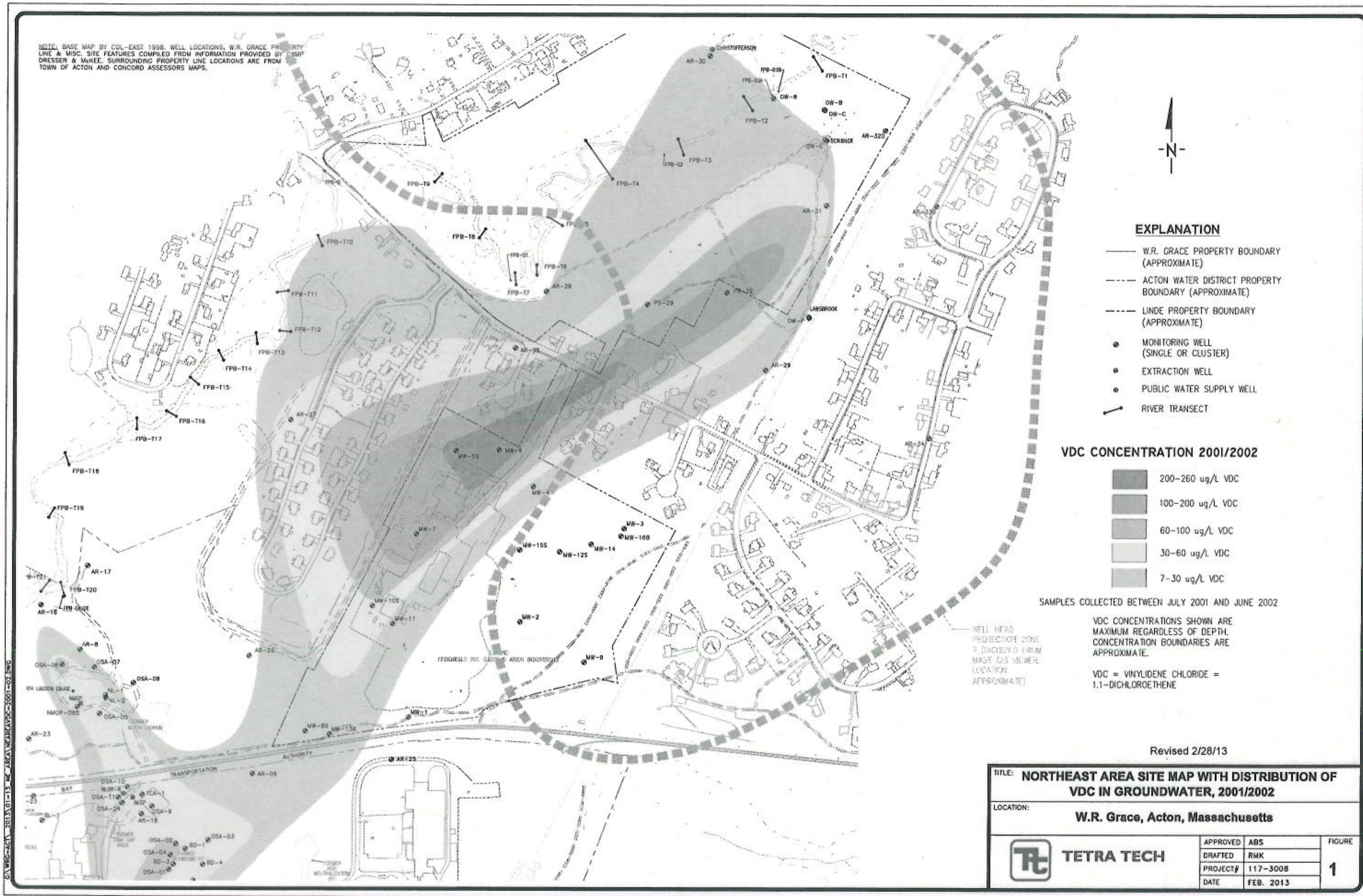
NOTE: BASE MAP BY COL-EAST 1998. WELL LOCATIONS, W.R. GRACE PROPERTY LINE & MISC. SITE FEATURES COMPILED FROM INFORMATION PROVIDED BY CAMP DRESSER & McKEE. SURROUNDING PROPERTY LINE LOCATIONS ARE FROM TOWN OF ACTON AND CONCORD ASSESSORS MAPS.
-N-
EXPLANATION
W.R. GRACE PROPERTY BOUNDARY (APPROXIMATE)
ACTON WATER DISTRICT PROPERTY BOUNDARY (APPROXIMATE)
LINDE PROPERTY BOUNDARY (APPROXIMATE)
MONITORING WELL (SINGLE OR CLUSTER)
EXTRACTION WELL
PUBLIC WATER SUPPLY WELL
RIVER TRANSECT
VDC CONCENTRATION 2001/2002
200-260 ug/L VDC
100-200 ug/L VDC
60-100 ug/L VDC
30-60 ug/L VDC
7-30 ug/L VDC
SAMPLES COLLECTED BETWEEN JULY 2001 AND JUNE 2002
VDC CONCENTRATIONS SHOWN ARE MAXIMUM REGARDLESS OF DEPTH. CONCENTRATION BOUNDARIES ARE APPROXIMATE.
VDC = VINYLIDENE CHLORIDE = 1,1-DICHLOROETHENE
WELL HEAD PROTECTION ZONE 2 DIGITIZED FROM MASS GIS VIEWER. LOCATION APPROXIMATE
CHRISTOFFERSON
SCRIBNER
LAWSBROOK
AR-30
AR-31
AR-29
AR-28
AR-27
AR-320
AR-34
AR-17
AR-09
AR-23
AR-25
PS-29
PS-22
MW-55
MW-5
MW-4
MW-7
MW-10S
MW-11
MW-3
MW-16B
MW-14
MW-12S
MW-15S
MW-2
MW-9
MW-1
MW-8S
MW-13B
FPB-T1
FPB-T2
FPB-T3
FPB-T4
FPB-T6
FPB-T7
FPB-T8
FPB-T9
FPB-T10
FPB-T11
FPB-T12
FPB-T13
FPB-T14
FPB-T15
FPB-T16
FPB-T17
FPB-T18
FPB-T19
FPB-T20
OW-8
OW-B
OW-C
OSA-06
OSA-07
OSA-08
OSA-03
NL-1
NL-2
NMOP-OBS
AR-18
(FORMERLY PGC GAS AREA INDUSTRIES)
TRANSPORTATION
AUTHORITY
BAY
FORMER ACID NEUTRALIZATION PIT
Revised 2/28/13
TITLE: NORTHEAST AREA SITE MAP WITH DISTRIBUTION OF VDC IN GROUNDWATER, 2001/2002
LOCATION: W.R. Grace, Acton, Massachusetts
TETRA TECH
APPROVED ABS
DRAFTED RMK
PROJECT# 117-3008
DATE FEB. 2013
FIGURE 1
C:\WRG-ACT_2013\01-13_NE_AREA\NEAREAVDC-2001-02.DWG

Golden, Derrick

From: Golden, Derrick
Sent: Wednesday, February 27, 2013 4:25 PM
To: 'Weir, Barbara'
Subject: RE: Evaluation of Northeast Area Remedial Action, WR Grce Superfund Site, Acton, MA

Great!! My e-mail must be back up and running!

From: Weir, Barbara [mailto:Barb.Weir@aecom.com]
Sent: Wednesday, February 27, 2013 4:15 PM
To: Golden, Derrick
Subject: RE: Evaluation of Northeast Area Remedial Action, WR Grce Superfund Site, Acton, MA

Got it!

From: Golden, Derrick [mailto:Golden.Derrick@epa.gov]
Sent: Wednesday, February 27, 2013 4:04 PM
To: Weir, Barbara
Subject: FW: Evaluation of Northeast Area Remedial Action, WR Grce Superfund Site, Acton, MA

Hi Barb,

I am forwarding you the WR Grace petition to shutdown the Northeast Area treatment system. Please confirm that you have received.

Thank you.

Derrick

From: Sheehan, Anne [mailto:Anne.Sheehan@tetratech.com]
Sent: Monday, February 25, 2013 12:10 PM
To: Golden, Derrick; McWeeney, Jennifer (DEP) (jennifer.mcweeney@state.ma.us)
Cc: Chris Allen (Chris@actonwater.com); Lydia Duff (Lydia.Duff@grace.com); David Fuerst (dfuerst@oandm-inc.com); Jack Guswa (JGuswa@jgenvironmental.com); dhalley@town.acton.ma.us; Thor Helgason (thelgas@demaximis.com); Seth' 'Jaffe (SDJ@foleyhoag.com); Robert J. Medler (Robert.J.Medler@grace.com)
Subject: Evaluation of Northeast Area Remedial Action, WR Grce Superfund Site, Acton, MA

Attached is the Evaluation of the Northeast Area Remedial Action required by the ROD. Please let me know if you have any questions.

Anne

Anne B. Sheehan | Senior Hydrogeologist
Tel: 978.952.0120 ext. 108 | Fax: 978.952.0122 | Cell: 617.320.9874
Anne.Sheehan@tetratech.com

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Golden, Derrick

From: Golden, Derrick
Sent: Thursday, February 21, 2013 9:32 AM
To: Chris Allen; Doug Halley; Matt Mostoller
Cc: Barbara Weir; McWeeney, Jennifer (DEP); Jane Ceraso
Subject: January 2013 Montly Remedial Action Status Report - W. R. Grace (Acton Plant) Superfund site - Acton & Concord, MA
Attachments: WR Grace January 2013 monhtly RD-RA_status report.pdf

All,

Attached is the January 2013, monthly remedial action status report and the effluent results for the groundwater treatment systems at the W. R. Grace (Acton Plant) Superfund site - Acton & Concord, MA.

A hard copy has also been sent to the library.

Derrick S. Golden
Remedial Project Manager
United States Environmental Protection Agency
Region 1 - EPA New England
5 Post Office Square
Mail Code OSRR07-4
Boston, MA 02109-3912

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de maximis, inc.

135 Beaver Street
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Waltham, MA 02452
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(781) 642-1078 FAX

February 6, 2013

Mr. Derrick Golden
United States Environmental Protection Agency
5 Post Office Square
Mail Code OSRR07-4
Boston, MA 02109-3912

Ms. Jennifer McWeeney
Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108

RE: Progress Report for January 2013
W.R. Grace Acton Superfund Site

Dear Mr. Golden and Ms. McWeeney:

On behalf of W.R. Grace, this Progress Report describes W. R. Grace's activities at the Acton Site during the month of January 2013:

I. Action Taken

Northeast Area Groundwater:

- Operated and maintained the Northeast Area Groundwater system. A summary of the average and instantaneous flow rates from the system, and sampling results, is attached.
- Performed the monthly system sampling on January 7, 2013. The results are attached and document continued compliance with the discharge criteria.

Landfill Area Groundwater:

- Operated the Landfill Area Treatment System using a solution of 25 ug/l ADX added after the metals removal system, and prior to the Purifics photo-catalytic oxidation unit. Sampling performed on January 8, 2013 confirms this approach treats the 1,4-dioxane to below 3 ug/l. A summary of the results from that sampling event is attached.

II. Activities Scheduled for the Next Two Reporting Periods (February through March, 2013)

Northeast Area Groundwater:

- Continue operation of the NE Area treatment system.
- Submit a summary report on the operation of the NE Area Treatment System, with a formal request that the system be shut down by April 5, 2013, the end of its three year operating period.

Landfill Area Groundwater:

- Continue system operation using the ADX dosage of 25 ug/l solution.
- Perform the fourth quarterly toxicity testing on the effluent from the Landfill Area Treatment System the week of February 4, 2013.

III. Problems Encountered and Schedule Modifications

- None this reporting period.

IV. Community Relations Activities

- None this reporting period.

Please do not hesitate to call me at 781-642-8775, should you have any questions.

Sincerely,
de maximis,inc.
T. Helgason
Thor Helgason

CC: Robert Medler – Remedium Group
Lynne Gardner – Remedium Group
Anne Sheehan – GeoTrans
Dave Fuerst – O & M, Inc.
Jack Guswa – JG Environmental

Monthly Extraction Rates for Northeast Area Extraction Well NE-1

	Average	Instantaneous
Jan-13	19.2	19.9

Flow rates in gallons per minute.
Average - flow rate calculated using monthly totalizer readings
Instantaneous - rate indicated by flow meter during monthly monitoring

Northeast Area Groundwater Treatment System Sampling Results

	Discharge Standard	1/7/2013
Influent (NE-1)		
VDC	NA	36
Benzene	NA	1.2
Vinyl Chloride	NA	1.4
Arsenic, Total	NA	4.5
Iron, Total	NA	U (50)
Manganese, Total	NA	65
EPH	NA	ND
VPH		
Benzene	NA	1.2
Ethylbenzene	NA	U (1)
Methyl tert-butyl ether	NA	U (1)
m&p Xylene	NA	U (2)
Naphthalene	NA	U (1)
o-Xylene	NA	U (1)
Toluene	NA	U (1)
C5-C8 Aliphatics	NA	2.3 J
C9-C10 Aromatics	NA	U (10)
C9-C12 aliphatics	NA	3.1
Effluent		
VDC	7	U (1)
Benzene	5	U (1)
Vinyl Chloride	2	U (0.5)
1,4-Dioxane	3	1.8
Arsenic, Total	10	4.3
Iron, Total	NA	92
Manganese, Total	300	61

Concentrations in µg/L.
U (1) - not detected at limit indicated in parentheses.
NA - Not applicable

Monthly Landfill Area Extraction Rates

	MLF		SELF-1		SELF-2		SWLF-2		WLF		Total Landfill Area System	
Target Flow Rate (gpm)	**38**		**0.9-1.2**		**1-1.4**		**4**		**8**		**51-53**	
	Average	**Instantaneous**	**Average**	**Instantaneous**	**Average**	**Instantaneous**	**Average**	**Instantaneous**	**Average**	**Instantaneous**	**Average**	**Instantaneous**
Jan-13	39.3	40.4	0.7	0.8	1.4	1.4	5.9	6.1	9	9.3	56.3	58

Instantaneous - rate indicated by flow meter during monthly monitoring
Average - flow rate calculated using monthly totalizer readings

Landfill Area Groundwater Treatment System Sampling Results

	Discharge Limits	1/8/13
Influent		
VOCs		
VDC	NA	9.7
1,2 Dichloroethane	NA	1.4
1,2 Dichloropropane	NA	0.99 J
2-Butanone (MEK)	NA	U (10)
Benzene	NA	12
Chloroethane	NA	U (2)
Methlyene Chloride	NA	U (1)
MTBE	NA	U (1)
TCE	NA	U (1)
Vinyl Chloride	NA	4.4
1,4 Dioxane	NA	3.1
SVOCs		
Bis(2-chloroethyl) ether	NA	U (9.4)
Bis(2-ethylhexyl) phthalate	NA	U (9.4)
Metals		
Arsenic	NA	39
Beryllium	NA	U (1)
Chromium	NA	1.9 J
Iron	NA	11000
Lead	NA	10
Managanese	NA	3000
Nickel	NA	20
Other		
Phosphorus	NA	37
Effluent		
VOCs		
VDC	MO	0.63 J
1,2 Dichloroethane	MO	1.1
1,2 Dichloropropane	MO	U (1)
2-Butanone (MEK)	MO	U (10)
Benzene	MO	0.49 J
Chloroethane	MO	U (2)
Methlyene Chloride	MO	U (1)
MTBE	MO	U (1)
TCE	MO	U (1)
Vinyl Chloride	MO	U (0.5)
1,4 Dioxane	MO	1.9
SVOCs		
Bis(2-chloroethyl) ether	MO	U (9.6)
Bis(2-ethylhexyl) phthalate	MO	U (9.6)
Metals		
Arsenic	4* / 4*	0.75 J
Beryllium	MO	U (1)
Chromium III	579.3 / 27.7	U (5)
Iron	NAC / 1000	U (50)
Lead	14 / 0.5	0.63 J
Managanese	MO	4.8
Nickel	145.2 / 16.1	9 J
Other		
Phosphorus	NAC / 18	U (10)

Concentrations in µg/L.
U (1) - not detected at limit indicated in parentheses.
J - Estimated value
Discharge Limits - Maximum Daily / Average Monthly
MO - Monitoring Only
NA - Not applicable
NAC - No applicable criterion
* Interim arsenic limit

Golden, Derrick

From: Golden, Derrick
Sent: Thursday, February 07, 2013 2:41 PM
To: Chris@ActonWater.com; Doug Halley; jane.ceraso@paragon-c.com; McWeeney, Jennifer (DEP); Matt Mostoller; White, Sarah
Subject: Re: W.R. Grace (Acton Plant) - FINAL - Community Update/Fact Sheet - 2

FYI, a colored hard copy will be mailed out to over 540 people on the site mailing list within a week. Hard copies have also been sent to the library.

Derrick S. Golden
Remedial Project Manager
United States Environmental Protection Agency
Region 1 - EPA New England
5 Post Office Square
Mail Code OSRR07-4
Boston, MA 02109-3912

Tel: 617-918-1448
Fax: 617-918-0448

e-mail: golden.derrick@epa.gov

From: Derrick Golden/R1/USEPA/US
To: Chris@ActonWater.com, Doug Halley <dhalley@town.acton.ma.us>, Matt Mostoller <Matt@actonwater.com>
Cc: jane.ceraso@paragon-c.com, "McWeeney, Jennifer (DEP)" <Jennifer.Mcweeney@state.ma.us>, Sarah White/R1/USEPA/US@EPA
Date: 02/07/2013 02:28 PM
Subject: W.R. Grace (Acton Plant) - FINAL - Community Update/Fact Sheet

All,

Attached is the community update for the Grace site in Acton.

Derrick

[attachment "WR Grace EPA_ FINAL_Fact sheet_2_5_2013.pdf" deleted by Derrick Golden/R1/USEPA/US]

Derrick S. Golden
Remedial Project Manager
United States Environmental Protection Agency
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Mail Code OSRR07-4
Boston, MA 02109-3912

Tel: 617-918-1448
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e-mail: golden.derrick@epa.gov

Golden, Derrick

From: Golden, Derrick
Sent: Thursday, February 07, 2013 2:28 PM
To: Chris@ActonWater.com; Doug Halley; Matt Mostoller
Cc: jane.ceraso@paragon-c.com; McWeeney, Jennifer (DEP); White, Sarah
Subject: W.R. Grace (Acton Plant) - FINAL - Community Update/Fact Sheet

All,

Attached is the community update for the Grace site in Acton.

Derrick

WR Grace EPA_
FINAL_Fact sheet...

Derrick S. Golden
Remedial Project Manager
United States Environmental Protection Agency
Region 1 - EPA New England
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Mail Code OSRR07-4
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e-mail: golden.derrick@epa.gov

W.R. Grace (Acton Plant) Superfund Site

U.S. EPA | HAZARDOUS WASTE PROGRAM AT EPA NEW ENGLAND

THE SUPERFUND PROGRAM *protects human health and the environment by investigating and cleaning up often-abandoned hazardous waste sites and engaging communities throughout the process. Many of these sites are complex and need long-term cleanup actions. Those responsible for contamination are held liable for cleanup costs. EPA strives to return previously contaminated land and groundwater to productive use.*

SITE DESCRIPTION:

The W. R. Grace (Acton Plant) Superfund site is located in the towns of Acton and Concord, Massachusetts and has been used for industrial purposes since the 1800's. The W. R. Grace property is comprised of approximately 260 acres of land in both towns and includes several surface water bodies and wetlands. Grace acquired the property in 1954 and produced materials used to make concrete additives, organic chemicals, container sealing compounds, latex products, and paper and plastic battery separators. In 1982, all production of organic chemicals ceased at the Grace (Acton Plant) facility. The site was listed on the National Priorities List (NPL) in 1983.

IS THE DRINKING WATER SAFE?

Yes. The Acton Water District (AWD) continues to closely monitor, sample and treat the town's drinking water to ensure that safe drinking water standards are maintained, and to ensure that clean drinking water continues to be provided to all residents. The AWD will continue to provide oversight at the site until safe and appropriate cleanup levels are achieved.

WHERE WE ARE NOW:

There are four main areas at which the recent cleanup activities at the Grace site were performed: the Northeast Area, the Landfill Area, Sinking Pond and the North Lagoon Wetlands. See Figure 1. Contaminated groundwater continues to be extracted and treated from both the Landfill Area and the Northeast Area of the site. Contaminated sediments from both the North Lagoon Wetland and Sinking Pond that posed unacceptable risks were excavated and properly disposed of at an approved offsite disposal facility. The below section provides a summary of the construction and cleanup activities that have recently been completed. The Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection (MassDEP), the town of Acton, the AWD, and the Acton Citizens for Environmental Safety (ACES) will continue to provide oversight at the site.

NORTHEAST AREA:

Construction of the Northeast Area groundwater treatment system began in June 2009 and was completed in March 2010. This system consists of 1) an extraction well, from which approximately 20 gallons per minute (GPM) of contaminated groundwater are withdrawn from 211 feet below the ground surface (fbgs); a treatment system that removes Volatile Organic Compounds (VOCs) from the groundwater; and two injection wells, in which the treated groundwater is re-injected back into the aquifer at 70 fbgs. This system began operating on April 5, 2010. One objective of this treatment system is to protect the municipal water supply by reducing the mass of contamination in the most concentrated part of the plume. It was assumed that this treatment system would operate for approximately three years. At the end of this three-year period, an evaluation will be conducted to determine if pumping can be discontinued. This evaluation will include the following factors: 1) input from the AWD regarding yield and drawdown; 2.) contaminant concentrations at each of the three School Street Wells and whether they are meeting, and are expected to continue to meet, MCLs; and 3) the effectiveness of the extraction and treatment system. As of September 2012, the Northeast Area treatment system had pumped over 25.2 million gallons of contaminated groundwater and had removed approximately 13.5 pounds or 1.3 gallons of total VOCs. Figure 1 depicts the location of the Northeast Area treatment system at the site.

continued >

KEY CONTACTS:

DERRICK GOLDEN
EPA New England
Project Manager
(617) 918-1448
golden.derrick@epa.gov

JENNIFER McWEENEY
MassDEP Project Manager
(617) 654-6560
Jennifer.Mcweeney@state.ma.us

GENERAL INFO:

EPA NEW ENGLAND
5 Post Office Square
Suite 100
Boston, MA 02109-3912
(617) 918-1111
www.epa.gov/region1/

TOLL-FREE CUSTOMER SERVICE
1-888-EPA-7341

LEARN MORE AT:
www.epa.gov/region1/superfund/sites/graceacton

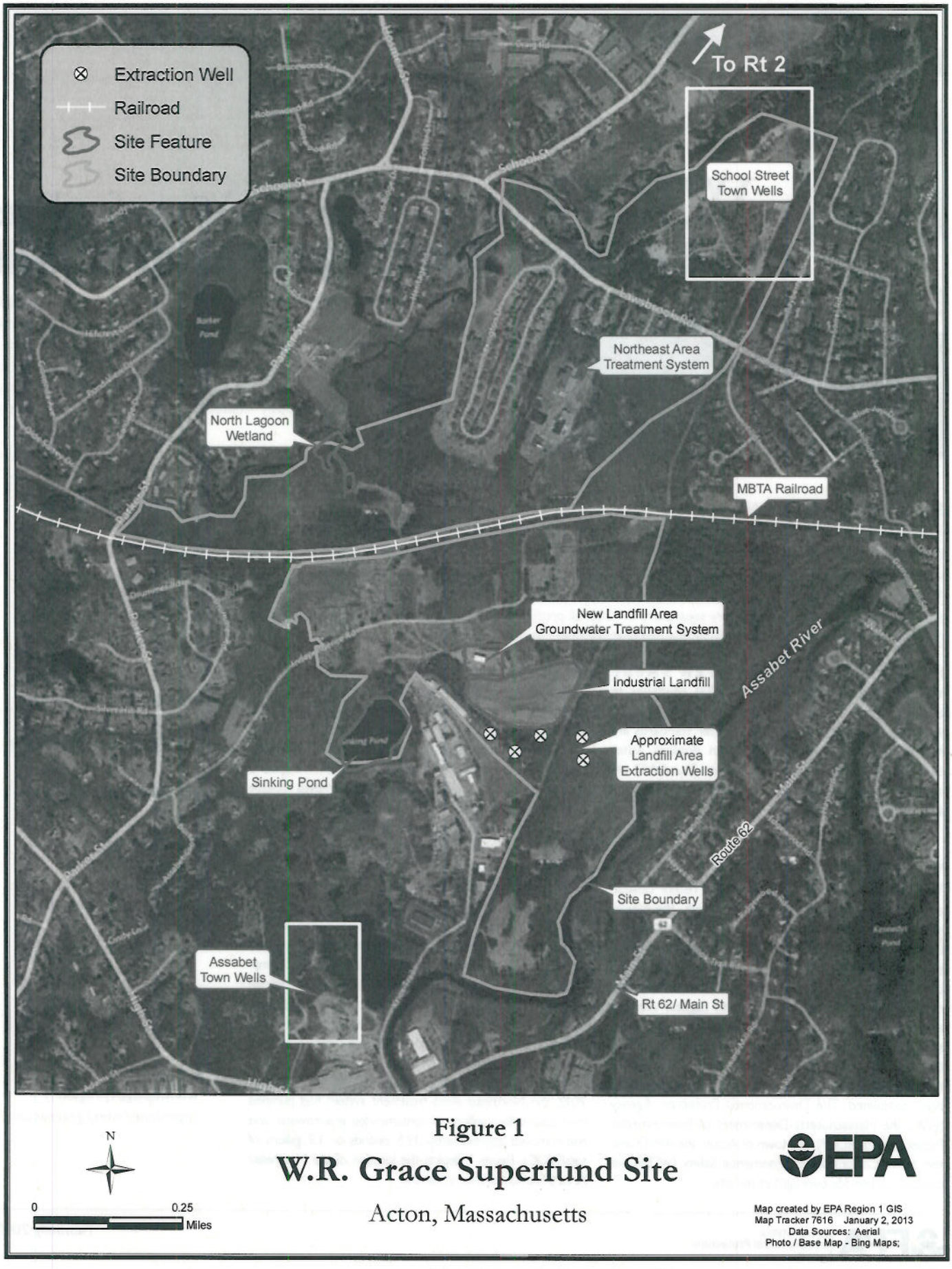


Figure 1

W.R. Grace Superfund Site

Acton, Massachusetts

EPA

Map created by EPA Region 1 GIS
Map Tracker 7616 January 2, 2013
Data Sources: Aerial
Photo / Base Map - Bing Maps;

LANDFILL AREA:

Construction of the foundation and building for the Landfill Area groundwater treatment system began in September 2010, and the installation of the treatment system equipment was complete by April 2011. This treatment system began operation on May 2, 2011, and will continue to operate until cleanup levels are met and groundwater no longer presents an unacceptable risk. This treatment system extracts 50-55 GPM of contaminated groundwater from five extraction wells located in the vicinity of the Industrial Landfill at various depths. Contaminated groundwater is treated to remove inorganics (metals), VOCs and 1,4 Dioxane. The treated effluent is then discharged into Sinking Pond and is sampled on a periodic basis to ensure continued compliance with discharge standards. Figure 1 depicts the location of the Landfill Area treatment system at the site. As of September 2012, the former Aquifer Restoration System and the new Landfill Area treatment system had pumped over 4,866 million gallons of contaminated groundwater and removed approximately 5,961 pounds or 589 gallons of total VOCs.

Sinking Pond before remediation

Sinking Pond after Remediation

North Lagoon Wetlands before remediation

North Lagoon wetlands after remediation

PROGRESS OF GROUNDWATER TREATMENT AND SEDIMENT CLEANUP:

Figure 2 depicts the decrease of groundwater contaminated with Vinylidene Chloride (VDC) from 2007 to 2011. This figure shows that the extent of VDC contamination greater than 30 parts per billion has notably decreased since 2007.

Numerous studies and sampling determined that there were unacceptable human health and ecological risks from continued exposure to arsenic- and manganese contaminated sediment. The contaminated sediments were located within the perimeter of Sinking Pond and within the North Lagoon Wetland. The cleanup actions were implemented between June and November 2011 and included the removal and proper offsite disposal of contaminated sediment. Results from the post excavation confirmation sampling determined that the appropriate and protective cleanup levels were achieved within the remaining sediment. A total of 8,100 cubic yards of contaminated sediment was removed from Sinking Pond and properly disposed off site. A total of 2,040 cubic yards of contaminated sediment was removed from the North Lagoon Wetland and properly disposed off site . Certified clean fill was sampled and then brought in to replace the removed contaminated sediment. Various native trees, vegetation and grasses were planted in wetland and upland locations in order to restore these areas to their natural condition over time. Spring and fall inspections of these replanted areas began in 2012 and will continue until 2017. This will ensure that the replanted trees, vegetation and grasses will survive and become established. See above photographs that show these areas before and after the cleanup activities.

NEXT STEPS:

Although construction of the final clean up actions has been completed, EPA & MassDEP will continue to oversee the following site activities:

- Continued operation and proper maintenance of both the Landfill and Northeast Area treatment systems,
- Continued oversight of the annual ground water monitoring and sampling programs,
- Bi-annual inspection of the restored wetlands and uplands,
- A thorough review of clean up actions every five years to ensure that the clean up actions remain protective of both human health and the environment, and
- Continued operation and proper maintenance of the capped Industrial Landfill.

ADDITIONAL CONTACTS:

DOUG HALLEY
Town of Acton Health Department
Health Director
(978) 264-9634
dhalley@town.acton.ma.us

MATT MOSTOLLER
Acton Water District
Enviromental Manager
(978) 263-9107
matt@actonwater.com

ACTON CITIZENS FOR ENVIRONMENTAL SAFETY
info@actonaces.org
www.actonaces.org

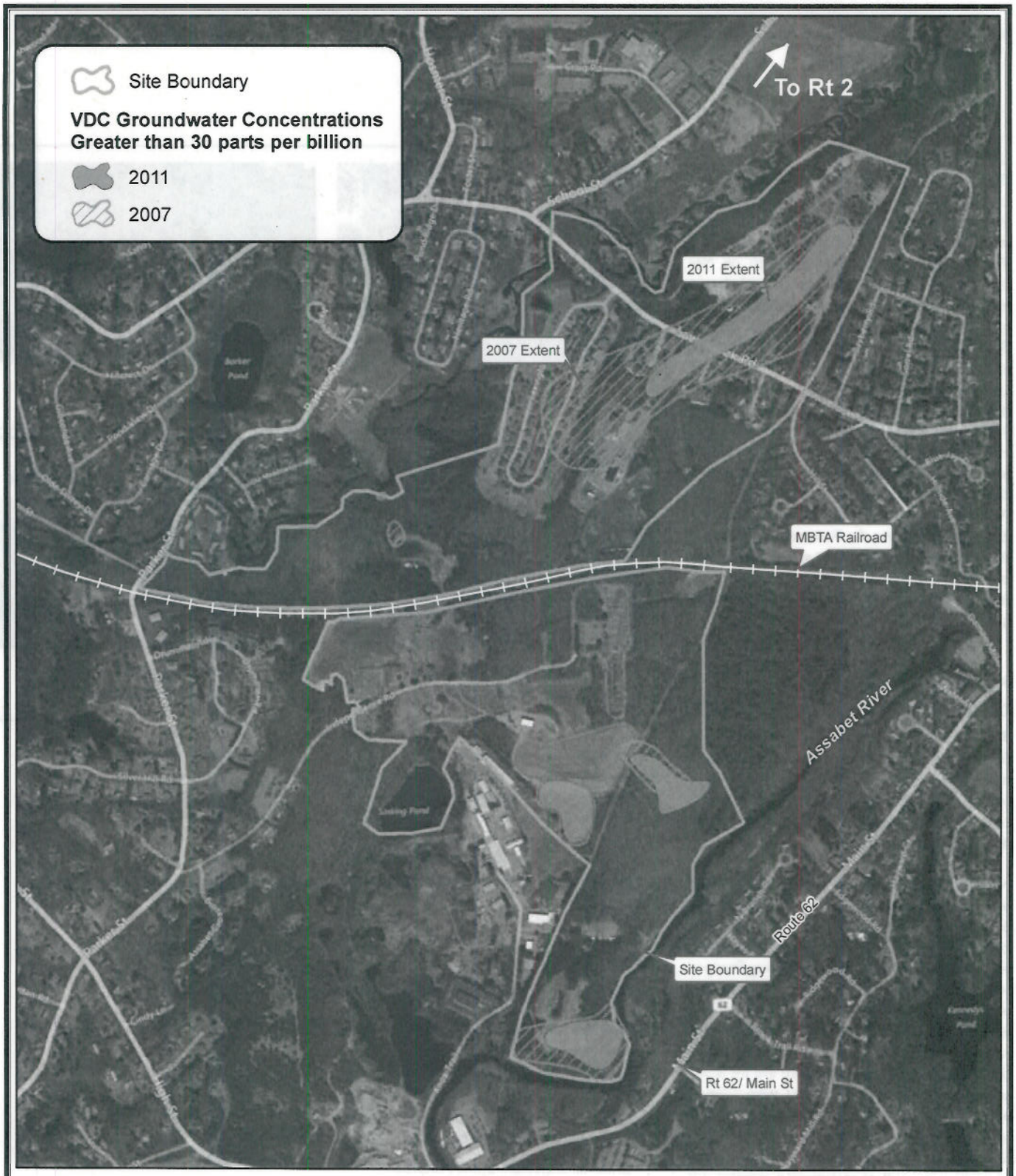


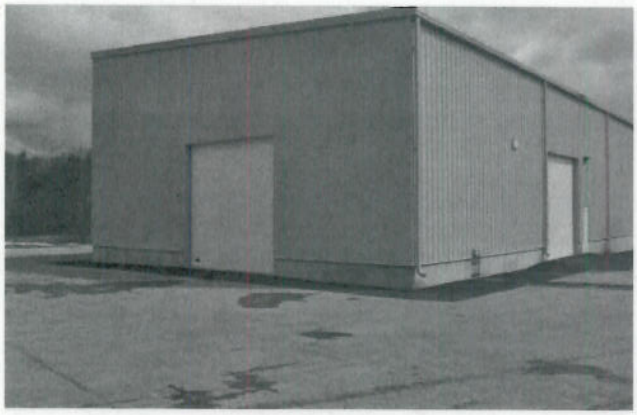
Figure 2

Decrease of VDC Concentrations from 2007 to 2011 W.R. Grace Superfund Site

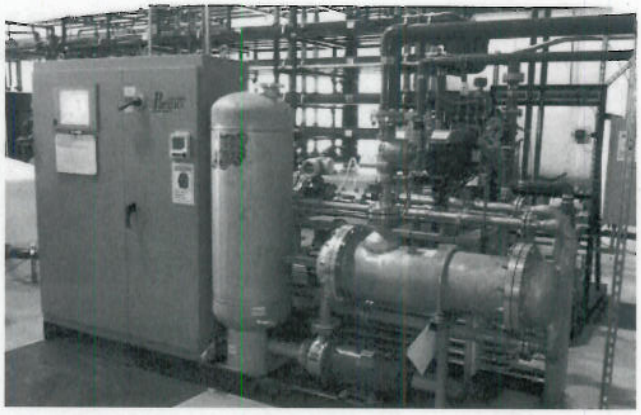
Acton, Massachusetts

EPA

Map created by EPA Region 1 GIS
Map Tracker 8938 December 5, 2012
Data Sources: Aerial Photo / Base Map -
(c) 2010 Microsoft Corporation and its data suppliers; Groundwater Data - TetraTech;

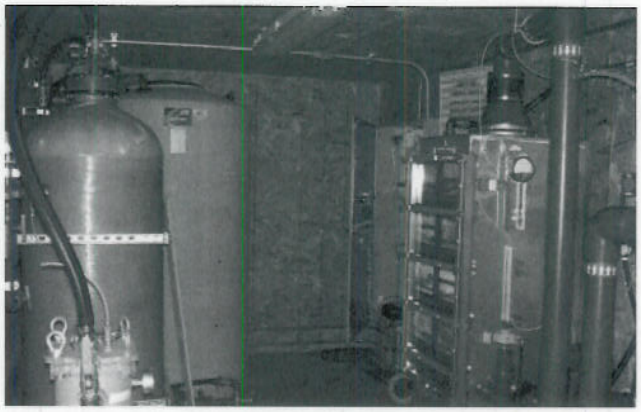


Exterior photo of Landfill Area treatment system



Interior Photo of Landfill Area treatment system

Exterior photo of Northeast Area treatment system



Interior photo of Northeast Area treatment system

W.R. GRACE (ACTON PLANT) SITE HISTORY

1945-1954:	Dewey & Almy Chemical Company manufactures various products at the Acton site at various times including latex, resins, plasticizers, and paper battery separators
1954-1991:	W. R. Grace acquires Dewey & Almy and continues various chemical manufacturing processes at the Acton site
1978:	Organic contaminants (vinylidene chloride, vinyl chloride, ethylbenzene, and benzene) detected in municipal wells (Assabet #1 and #2)
1980:	W. R. Grace and EPA enter into a Consent Decree to cleanup waste disposal areas and restore groundwater to a fully useable condition
1983:	Site added to the Superfund National Priorities List (NPL)
1984:	As part of an agreement between the AWD and W.R. Grace, a treatment system to remove VOC's was added to the public water supply system.
1985:	As required by the Consent Decree, an Aquifer Restoration System (ARS) is constructed and begins cleaning up contaminated groundwater
1989:	EPA signs first Record of Decision for the site; this Record of Decision included a frame work to address all areas of the s site by dividing the site into three Operable Units: Operable Unit 1 soil contamination; Operable Unit 2 residual soil contamination; and Operable Unit 3 groundwater contamination focusing on an evaluation of the existing ARS; this first Record of Decision also included a cleanup plan to address soil and residual soil contamination at the site (Operable Units 1 and 2)
1994:	Soil cleanup begins
1997:	Soil cleanup completed
1998:	Remedial Investigation/Feasibility study (RI/FS), ecological and human health risk assessments initiated for Operable Unit 3
1999:	EPA prepares first 5-year clean up review; finds past clean up is protective
2004:	EPA prepares second 5-year clean up review; finds past clean up is protective
2005:	RI/FS and human health and ecological risk assessment reports released, EPA issues a Record of Decision and proposes the cleanup plans for Operable Unit 3
2005-2010:	Numerous studies and engineering designs were conducted under the review and oversight of the Environmental Protection Agency, the Massachusetts Department of Environmental Protection (MassDEP), the Town of Acton, the Acton Water District, the Acton Citizens for Environmental Safety and AECOM.
2011-2012:	Construction and operation of the Northeast and Landfill Area treatment systems and the removal and offsite disposal of sediment from Sinking Pond and the North Lagoon Wetland.
2012-present:	Continued groundwater pumping and treatment

Golden, Derrick

From: Golden, Derrick
Sent: Wednesday, February 06, 2013 9:22 AM
To: Thor Helgason
Cc: jennifer.mcweeney@state.ma.us
Subject: Re: Acton - Monthly Progress Report - REPLY

Hi Thor,

Thank you for submitting the January monthly progress report.

I wanted to follow up with you on a few items. I received your voice message that you area planning to submit the petition to shut down the NE area treatment system sometime around 2/12. Please submit both a hard and electronic copy to both Jen and myself. We will need to provide a copy to the Acton stakeholder's to allow them an opportunity to review and comment.

Lastly, our graphic folks are making final edits to the community update today, I'll provide you with the final electrnic copy. By the end of this week, EPA will print and then mail out hard copies to the site mailing list.

Derrick

Derrick S. Golden
Remedial Project Manager
United States Environmental Protection Agency
Region 1 - EPA New England
5 Post Office Square
Mail Code OSRR07-4
Boston, MA 02109-3912

Tel: 617-918-1448
Fax: 617-918-0448

e-mail: golden.derrick@epa.gov

From: "Thor Helgason" <thelgas@demaximis.com>
To: Derrick Golden/R1/USEPA/US@EPA
Cc: <jennifer.mcweeney@state.ma.us>
Date: 02/06/2013 08:40 AM
Subject: Acton - Monthly Progress Report

Derrick and Jennifer -

Attached is the Monthly Progress Report for the W.R. Grace - Acton Site.

Thor
[attachment "ACTON FEB13 MPR.pdf" deleted by Derrick Golden/R1/USEPA/US]

Golden, Derrick

From: Golden, Derrick
Sent: Tuesday, February 05, 2013 3:27 PM
To: Chris@ActonWater.com; Doug Halley; info@actonaces.org; Jane Ceraso; McWeeney, Jennifer (DEP); Matt Mostoller; Barb.Weir@m-e.aecom.com
Subject: December 2012 Montly Remedial Action Status Report - W. R. Grace (Acton Plant) Superfund site - Acton & Concord, MA

All,

Attached is the December 2012, monthly remedial action status report and the effluent results for the groundwater treatment systems at the W. R. Grace (Acton Plant) Superfund site - Acton & Concord, MA. Sorry if you received this twice but I realized that I received an error message that this was not received by some folks.

A hard copy has also been sent to the library.

Derrick S. Golden
Remedial Project Manager
United States Environmental Protection Agency
Region 1 - EPA New England
5 Post Office Square
Mail Code OSRR07-4
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WR Grace
ember 2012 monh

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January 8, 2013

Mr. Derrick Golden
United States Environmental Protection Agency
5 Post Office Square
Mail Code OSRR07-4
Boston, MA 02109-3912

Ms. Jennifer McWeeney
Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108

RE: Progress Report for December 2012
W.R. Grace Acton Superfund Site

Dear Mr. Golden and Ms. McWeeney:

On behalf of W.R. Grace, this Progress Report describes W. R. Grace's activities at the Acton Site during the month of December 2012:

I. Action Taken

Northeast Area Groundwater:

- Operated and maintained the Northeast Area Groundwater system. A summary of the average and instantaneous flow rates from the system, and sampling results, is attached.
- Performed the monthly system sampling on December 7, 2012. The results are attached and document continued compliance with the discharge criteria.

Landfill Area Groundwater:

- Operated the Landfill Area Treatment System using a solution of 25 ug/l ADX added after the metals removal system, and prior to the Purifics photo-catalytic oxidation unit. Sampling performed on December 4, 2012 confirms this approach treats the 1,4-dioxane to below 3 ug/l. A summary of the results from that sampling event is attached.

- Received the results of the third quarterly effluent toxicity test sampling, performed on November 12, 14, and 16, 2012. A summary of the results is attached. The full laboratory report was provided to EPA and MADEP on December 12, 2012.

Other:

- Submitted the 2012 Annual Groundwater Monitoring Program Report on December 20, 2012.

II. Activities Scheduled for the Next Two Reporting Periods (January through February, 2013)

Northeast Area Groundwater:

- Continue operation of the NE Area treatment system.

Landfill Area Groundwater:

- Continue system operation using the ADX dosage of 25 ug/l solution.

III. Problems Encountered and Schedule Modifications

- None this reporting period.

IV. Community Relations Activities

- None this reporting period.

Please do not hesitate to call me at 781-642-8775, should you have any questions.

Sincerely,
de maximis,inc.
T. Helgason
Thor Helgason

CC: Robert Medler – Remedium Group
Lynne Gardner – Remedium Group
Anne Sheehan – GeoTrans
Dave Fuerst – O & M, Inc.
Jack Guswa – JG Environmental

Monthly Extraction Rates for Northeast Area Extraction Well NE-1

	Average	Instantaneous
Jan-12	16.9**	20.2
Feb-12	19.4	19.7
Mar-12	16.9***	20.1
Apr-12	19.9	20
May-12	19.8	19.9
Jun-12	19	20.2
Jul-12	19.7	19.4
Aug-12	19.9	20.2
Sep-12	19.7	20.4
Oct-12	19.5	20.3
Nov-12	19.5	19.5
Dec-12	19.2	19.5

Flow rates in gallons per minute.
Average - flow rate calculated using monthly totalizer readings
Instantaneous - rate indicated by flow meter during monthly monitoring
**NE-1 ran intermittently between approximately 1/4 and 1/10/12. Flow control valve on NE-1 was repaired on 1/10/12.
*** NE-1 off between 3/2/12 and 3/6/12 due to electrical damage caused by Nstar.

Northeast Area Groundwater Treatment System Sampling Results

	Discharge Standard	1/4/2012	2/8/2011	3/1/2012	4/11/2012	5/4/2012	6/5/2012	7/10/2012	8/16/2012	9/13/2012	10/10/2012	11/13/2012	12/7/2012
Influent (NE-1)													
VDC	NA	43	43	44	45	43	40	52	40	39	33	39	32
Benzene	NA	1.1	1.3	1.2	1.1	1.1	1.1	1	1.8	1.1	1	1.2	0.99
Vinyl Chloride	NA	1.4	1.6	1.4	1.4	1.4	1.1	1.6	1.2	1.3	1.4	1.3	1
1,4-Dioxane	NA	NA	1.98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic, Total	NA	3.6	4.5	3.7	3.4	3.7	3.5	3.6	4	4	4.4	4.4	4.6
Iron, Total	NA	150	290	U (100)	U (100)	U (100)	U (100)	U (100)	18 JB	47 JB	20 J	ND (50)	19
Manganese, Total	NA	66.8	61.3	68.6	63.8	65.6	64.8	64.4	60	58 B	59	63	59
EPH	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10.8^	ND
VPH													
Benzene	NA	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (1)	U (1)	U (1)	1.1	1.1
Ethylbenzene	NA	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (1)	U (1)	U (1)	U (1)	U (1)
Methyl tert-butyl ether	NA	U (3)	U (3)	U (3)	U (3)	U (3)	U (3)	U (3)	U (1)	U (1)	U (1)	U (1)	U (1)
m&p Xylene	NA	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)
Naphthalene	NA	U (4)	U (4)	U (4)	U (4)	U (4)	U (4)	U (4)	U (5)	U (5)	U (5)	U (1)	U (1)
o-Xylene	NA	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (1)	U (1)	U (1)	U (1)	U (1)
Toluene	NA	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (2)	U (1)	U (1)	U (1)	U (1)	U (1)
C5-C8 Aliphatics	NA	U (50)	U (50)	U (50)	U (50)	U (50)	U (50)	U (50)	U (50)	U (50)	U (50)	U (10)	1.5 J
C9-C10 Aromatics	NA	U (50)	U (50)	U (50)	U (50)	U (50)	U (50)	50.3	U (50)	U (50)	U (50)	U (10)	U (10)
C9-C12 aliphatics	NA	U (50)	U (50)	U (50)	U (50)	U (50)	56.5	U (50)	U (50)	U (50)	U (50)	U (10)	2.5 J
Effluent													
VDC	7	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)
Benzene	5	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)
Vinyl Chloride	2	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (0.5)	U (0.5)	U (0.5)	U (0.5)	U (0.5)
1,4-Dioxane	3	1.92	2.49	1.67	2.25	2.07	1.97	1.91	1.9	2	1.6	1.9	1.8
VPH	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA
Arsenic, Total	10	2.7	3	3.5	3.4	3.5	3.5	3.8	3.6	3.9	4.2	4.5	4.5
Iron, Total	NA	U (100)	380	U (100)	360	U (100)	U (100)	U (100)	360 B	67 JB	2200	770	520
Manganese, Total	300	80.3	61.2	67	64.7	59.3	63.7	60	63	53 B	60	68	64

Concentrations in µg/L.
U (1) - not detected at limit indicated in parentheses.
NA - Not applicable
ND - Not detected
B - Compound was found in the blank and sample.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is approximate
^ Acenaphthylene detected at 2.9 µg/L and naphthalene detected at 7.9 µg/L

Monthly Landfill Area Extraction Rates

	MLF		SELF-1		SELF-2		SWLF-2		WLF		Total Landfill Area System	
Target Flow Rate (gpm)	38		0.9-1.2		1-1.4		4		8		51-53	
	Average	Instantaneous	Average	Instantaneous	Average	Instantaneous	Average	Instantaneous	Average	Instantaneous	Average	Instantaneous
Feb-12	28.7	37.9	0.7	1	1.1	1.4	3.1	4	6.5	8.3	39	51.2
Mar-12	35.8	38.3	0.7	1	0.8	1.3	3.8	4.1	7.2	8	48.3	52.7
Apr-12	36.6	38.3	0.8	1	1.5	1.5	3.9	4.1	5.8	6.5	48.6	51.4
May-12	37	38.1	0.9	1	1.3	1.3	4	4	7.6	7.8	50.8	52.2
Jun-12	17.8	38.2	0.4	1	0.5	1.3	1.9	4	3.8	8.3	24.4	52.8
Jul-12	28.7	38.1	0.9	1.2	1.1	1.5	3.3	4	6.2	8	40.2	52.8
Aug-12	28.9	40	0.8	1.1	0.9	1.3	4.4	6	6.3	8.7	41.3	57.1
Sep-12	21	39.9	0.6	1.1	0.6	1.3	2.9	6.1	3.6	7.3	28.7	55.7
Oct-12	26.4	39.6	0.7	1	0.9	1	5.4	6.1	7.9	8.9	41.3	56.6
Nov-12	38.8	39.9	0.8	1	1	1	5.9	6	8.9	9	55.4	56.9
Dec-12	36	40.5	0.8	0.9	0.9	1	5.4	6	8.2	9.5	51.3	57.9

Instantaneous - rate indicated by flow meter during monthly monitoring
Average - flow rate calculated using monthly totalizer readings
SELF-1 off for repairs 1/18/12 through 1/23/12. New pump installed 1/23/12.
SELF-1 and SELF-2 off for redevelopment 3/8/12 through 3/14/12
WLF redeveloped on 5/4/12
MLF off-line for several days in mid-July due to pump failure. Pump replaced July 19, 2012.

Landfill Area Groundwater Treatment System Sampling Results

	Discharge Limits	1/5/12	2/23/12	3/19/12	4/11/12	4/30/12	5/14/12	5/31/12	6/5/12	7/10/12	8/20/12	9/13/12	10/11/12	11/12/12	12/4/12
Influent															
VOCs															
VDC	NA	7.1	8.8	8.5	11	NS	9	NS	9.2	10	8.4	8.5	8.2	0.42 J	8.8
1,2 Dichloroethane	NA	2.4	1.7	1.9	1.4	NS	1.9	NS	1.6	2	1.7	1.4	1.6	1.4	1.5
1,2 Dichloropropane	NA	1.3	1.4	1.2	1.2	NS	1.1	NS	1.3	0.99 J	1.1	0.88 J	1.2	0.95 J	0.93 J
2-Butanone (MEK)	NA	U (5)	U (10)	U (5)	U (5)	NS	U (5)	NS	U (5)	U (5)	U (10)	U (10)	U (10)	U (10)	U (10)
Benzene	NA	11	13	12	7.7	NS	11	NS	16	9.4	9.4	11	12	12	12
Chloroethane	NA	0.45 J	U (2)	0.42 J	0.55 J	NS	0.58 J	NS	0.47 J	0.61 J	0.54 J	0.53 J	0.45 J	U (2)	U (2)
Methlyene Chloride	NA	U (1)	U (2)	U (1)	U (1)	NS	U (1)	NS	U (1)	U (1)	U (2)	U (2)	U (2)	U (1)	U (1)
MTBE	NA	U (1)	U (1)	U (1)	U (1)	NS	U (1)	NS	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)
TCE	NA	U (1)	U (1)	U (1)	U (1)	NS	U (1)	NS	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)
Vinyl Chloride	NA	3.4	4.4	3.5	4.2	NS	4.2	NS	3.6	3.9	4.1	3.4	2.9	3.5	3.4
1,4 Dioxane	NA	3.72	3.2	4.28	3.95	NS	3.9	NS	3.66	3.3	3.9	3.5	2.9	2.9	2.7
SVOCs															
Bis(2-chloroethyl) ether	NA	U (10)	NS	U (9.4)	U (9.4)	NS	U (9.4)	NS	U (9.4)	U (9.4)	U (9.3)	U (9.4)	U (9.4)	U (9.9)	U (9.5)
Bis(2-ethylhexyl) phthalate	NA	U (10)	NS	U (9.4)	U (9.4)	NS	U (9.4)	NS	U (9.4)	U (9.4)	U (9.3)	U (9.4)	U (9.4)	U (9.9)	U (9.5)
Metals															
Arsenic	NA	36.6	29	35.2	31.3	NS	31.2	NS	52.9	39.2	34	31	44	42	41
Beryllium	NA	U (1)	NS	U (1)	U (1)	NS	U (1)	NS	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)
Chromium	NA	U (2)	NS	U (2)	U (2)	NS	U (2)	NS	U (2)	U (2)	U (5)	U (5)	3.4 J	U (5)	U (5)
Iron	NA	9580	10000	9350	9630	NS	9090	NS	14900	10200	11000 B	10000 B	12000	10000	10000
Lead	NA	U (1)	NS	U (1)	U (1)	NS	U (1)	NS	U (1)	U (1)	0.31 J	0.38 JB	0.36 J	0.48 JB	2.4
Managanese	NA	3580	3300	3450	3490	NS	3410	NS	3420	3420	3000	2900 B	3000	3000	3100
Nickel	NA	13.7	NS	13.8	12.5	NS	14.1	NS	14	14.1	11	11	14	14	13
Other															
Phosphorus	NA	76.3	NS	71.7	46.5	NS	37.9	NS	74.7	40.5	U (10)	110	250	67	56
Effluent															
VOCs															
VDC	MO	U (1)	U (1)	U (1)	U (1)	NS	U (1)	NS	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	0.39 J
1,2 Dichloroethane	MO	2	1.4	1.2	1.3	NS	U (1)	NS	U (1)	U (1)	0.61 J	0.84 J	0.76 J	0.69 J	1.2
1,2 Dichloropropane	MO	1.2	1	0.85 J	1.1	NS	U (1)	NS	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)
2-Butanone (MEK)	MO	U (5)	U (10)	1 J	U (5)	NS	38	NS	0.89 J	1.2 J	U (10)	U (10)	U (10)	U (10)	U (10)
Benzene	MO	2.4	1.6	0.52 J	1.3	NS	U (1)	NS	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)
Chloroethane	MO	U (1)	U (2)	U (1)	U (1)	NS	U (1)	NS	U (1)	U (1)	0.46 J	0.31 J	U (2)	U (2)	U (2)
Methlyene Chloride	MO	U (1)	U (2)	0.29 J	0.21 J	NS	U (1)	NS	U (1)	0.37 J	U (2)	U (2)	U (2)	U (1)	U (1)
MTBE	MO	U (1)	U (1)	U (1)	U (1)	NS	U (1)	NS	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)
TCE	MO	U (1)	U (1)	U (1)	U (1)	NS	U (1)	NS	U (1)	U (1)	U (1)	U (1)	U (1)	U (0.5)	U (1)
Vinyl Chloride	MO	U (1)	U (0.5)	U (1)	U (1)	NS	U (1)	NS	U (1)	0.25 J	0.35 J	0.21 J	0.23 J	U (0.5)	U (0.5)
1,4 Dioxane	MO	2.48	1.8	1.84	2.33	NS	U (0.196)	NS	2.08	1.67	1.6	1.6	1.6	1.5	1.8
SVOCs															
Bis(2-chloroethyl) ether	MO	U (9.4)	NS	U (9.4)	U (9.4)	NS	U (9.4)	NS	U (9.4)	U (9.4)	U (9.3)	U (9.4)	U (9.3)	U (9.7)	U (9.5)
Bis(2-ethylhexyl) phthalate	MO	U (9.4)	NS	U (9.4)	U (9.4)	NS	U (9.4)	NS	U (9.4)	U (9.4)	U (9.3)	U (9.4)	U (9.3)	U (9.7)	U (9.5)
Metals															
Arsenic	4* / 4*	U (1)	U (1)	1.6	1	NS	U (1)	NS	1.1	U (1)	U (1)	0.59 J	0.95 J	0.73 J	0.81 J
Beryllium	MO	U (1)	NS	U (1)	U (1)	NS	U (1)	NS	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)	U (1)
Chromium III	579.3 / 27.7	U (2)	NS	2.5	U (2)	NS	U (2)	NS	U (2)	U (2)	U (5)	U (5)	1.9 J	U (5)	1.1 J
Iron	NAC / 1000	U (100)	U (100)	U (100)	140	NS	U (100)	NS	300	U (100)	22 J B	190 B	57 J	420	39 J
Lead	14 / 0.5	U (1)	NS	U (1)	38	U (1)	U (1)	NS	U (1)	1.2	0.79 J	0.97 JB	0.45 J	0.57 JB	0.41 J
Managanese	MO	U (1)	U (10)	U (1)	7.3	NS	3.3	NS	92.4	31.1	7.5 J	17 B	12	8.9	9.8
Nickel	145.2 / 16.1	10.3	NS	10.7	10.2	NS	U (1)	NS	9.3	10.9	8.5 J	8.7 J	11	13	9.2 J
Other															
Phosphorus	NAC / 18	U (6)	NS	14.9	6.6	NS	183	U (10)	U (6)	U (6)	25	58	66	U (10)	8 J

Concentrations in µg/L.
U (1) - not detected at limit indicated in parentheses.
J - Estimated value
B - Compound was found in the blank and sample.
Discharge Limits - Maximum Daily / Average Monthly
MO - Monitoring Only
NA - Not applicable
NAC - No applicable criterion
* Interim arsenic limit
NS - Not sampled

Aquatec Biological Sciences, Inc.

273 Commerce Street
Williston, VT 05495
Tel: (802) 860 - 1638 Fax: (802) 658 - 3189

SDG: 13424
Project: 12019

Toxicity Summary Report

O & M, Inc.
450 Montbrook Lane

Knoxville, TN 37919

Tel: (865) 691-6254
Fax: (865) 691-9595

E-Mail: dfuerst@oandm-inc.com

Project: O&M WR Grace **Permit No.** WR Grace Acton

Sample Name: **WR Grace Acton Treated GW (OU-3)** Sample ID: **43930**

		ACUTE		CHRONIC	
		%		%	
Method	Species	A-NOEC	A-LC50	C-NOEC	C-LOEC
1002.0	*Ceriodaphnia dubia*	100	>100	100	>100
1000.0	*Pimephales promelas*	100	>100	100	>100

Samples Received

Number	Sample Name	Date Time and Collected	Type
43930	WR Grace Acton Treated GW (OU-3)	11/12/2012 10:00:00 AM	Effluent
43933	WR Grace Acton treated GW (OU-3)	11/14/2012 9:30:00 AM	Effluent
43935	WR Grace Acton Treated GW (OU-3)	11/16/2012 12:00:00 PM	Effluent

Submitted By:

Tuesday, December 11, 2012

Aquatec Biological Sciences, Inc.
273 Commerce Street
Williston, VT 05495
Tel: (802) 860 - 1638 Fax: (802) 658 - 3189

SDG: 13424
Project: 12019

Toxicity Detail Report

O & M, Inc.
450 Montbrook Lane

Knoxville, TN 37919

Tel: (865) 691-6254
Fax: (865) 691-9595

E-Mail: dfuerst@oandm-inc.com

Project: **O&M WR Grace** Permit No. **WR Grace Acton**

Sample ID: ***43930*** ***WR Grace Acton Treated GW (OU-3)***

Method: **1000.0** ***Pimephales promelas***

Response: Survival (%)

Day	Additional Control	% 0	6.25	12.5	25	50	100
2		100	98.3	100	100	100	98.3
7		98.3	98.3	100	100	98.3	98.3

Response: Growth per Original Number of Larvae (mean dry weight,mg)

	Additional Control	% 0	6.25	12.5	25	50	100
7		0.385	0.388	0.425	0.407	0.408	0.407

Method: **1002.0** ***Ceriodaphnia dubia***

Response: Survival (%)

Day	Additional Control	% 0	6.25	12.5	25	50	100
2		100	100	100	100	100	100
8		100	100	100	80	100	100

Response: Reproduction (mean neonates per female)

	Additional Control	% 0	6.25	12.5	25	50	100
8		23.6	23.5	23.9	34.8	32.9	32.8